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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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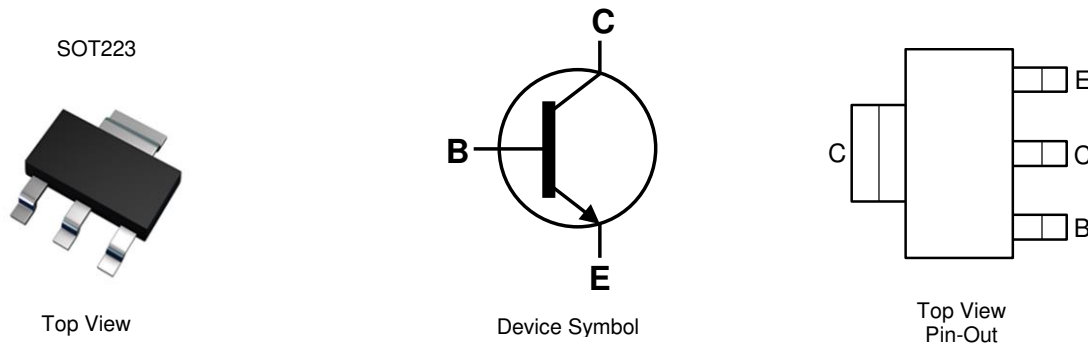
300V NPN MEDIUM POWER HIGH VOLTAGE TRANSISTOR IN SOT223

Features

- $BV_{CEO} > 300V$
- $BV_{CBO} > 300V$
- $I_C = 0.5A$ High Continuous Current
- $I_{CM} = 1A$ Peak Pulse Current
- Complementary PNP Type: FZT757
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Mechanical Data

- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads; Solderable per MIL-STD-202, Method 208 ③
- Weight: 0.112 grams (Approximate)

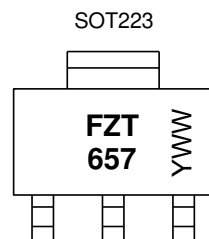


Ordering Information (Notes 4 & 5)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FZT657TA	AEC-Q101	FZT657	7	12	1,000
FZT657QTA	Automotive	FZT657	7	12	1,000

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



FZT 657 = Product Type Marking Code
 YWW = Date Code Marking
 Y or \bar{Y} = Last Digit of Year (ex: 5= 2015)
 WW or $\bar{W}W$ = Week Code (01~53)

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	300	V
Collector-Emitter Voltage	V _{CEO}	300	V
Emitter-Base Voltage	V _{EBO}	7	V
Continuous Collector Current	I _C	0.5	A
Peak Pulse Current	I _{CM}	1	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

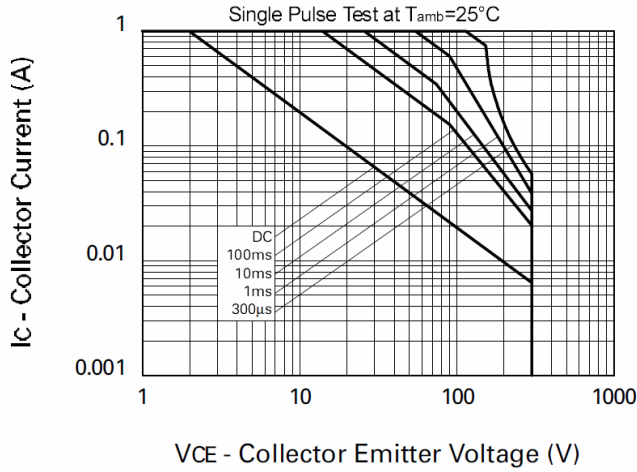
Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	3.0	W
		2.0	
		1.6	
		1.2	
Thermal Resistance, Junction to Ambient	R _{θJA}	41.7	°C/W
		62.5	
		78.1	
		104	
Thermal Resistance Junction to Lead	R _{θJL}	12.9	
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 11)

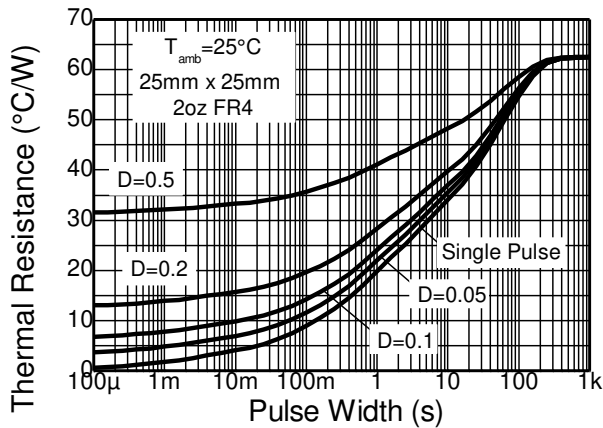
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
6. For a device mounted with the collector lead on 50mm x 50mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 7. Same as Note 6, except the device is mounted on 25mm x 25mm 2oz copper.
 8. Same as Note 6, except the device is mounted on 25mm x 25mm 1oz copper.
 9. Same as Note 6, except the device is mounted on minimum recommended pad layout.
 10. Thermal resistance from junction to solder-point (at the end of the collector lead).
 11. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

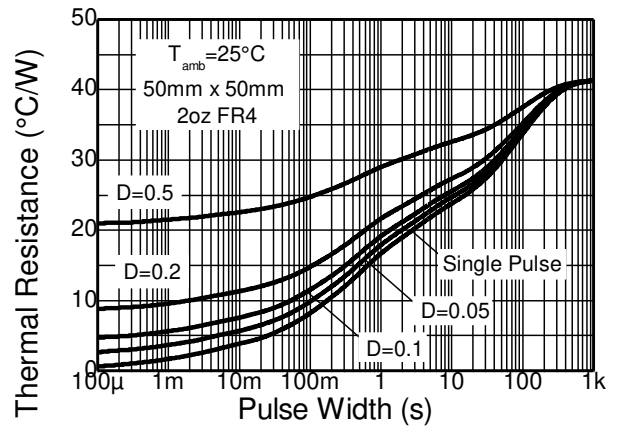
Thermal Characteristics and Derating Information



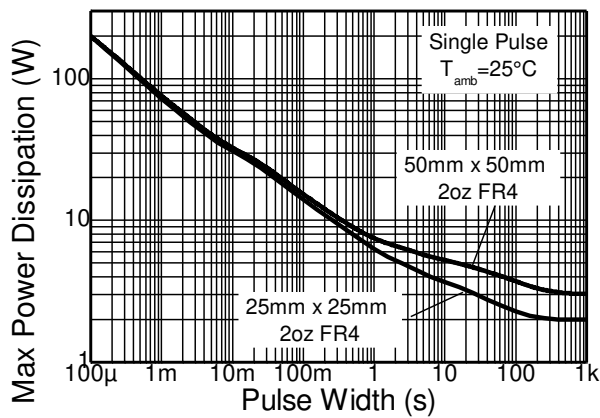
Safe Operating Area



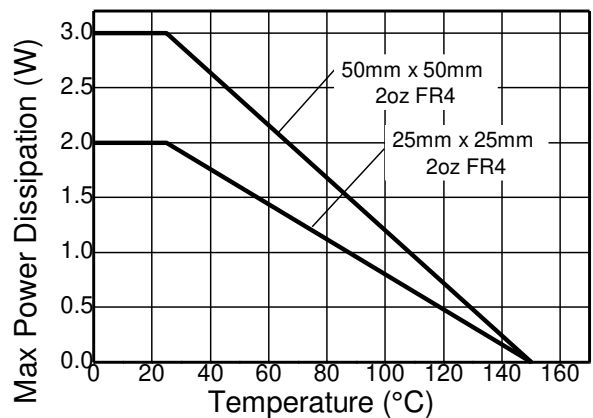
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



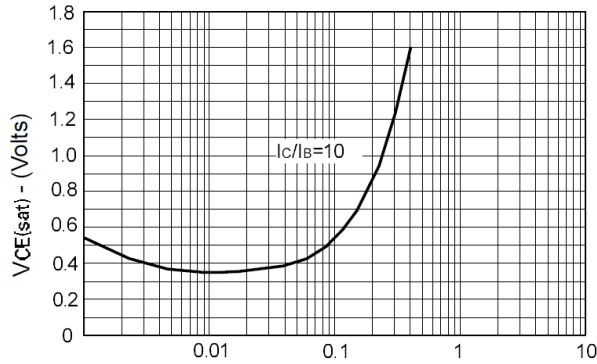
Derating Curve

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CB0}	300	—	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 12)	BV _{CEO}	300	—	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	7	—	—	V	I _E = 100μA
Collector-Base Cut-Off Current	I _{CB0}	—	—	100	nA	V _{CB} = 200V
Emitter Cut-Off Current	I _{EBO}	—	—	100	nA	V _{EB} = 5.6V
DC Current Gain (Note 12)	h _{FE}	40 50	— —	— —	—	I _C = 10mA, V _{CE} = 5V I _C = 100mA, V _{CE} = 5V
Collector-Emitter Saturation Voltage (Note 12)	V _{CE(sat)}	—	—	0.5	V	I _C = 100mA, I _B = 10mA
Base-Emitter Saturation Voltage (Note 12)	V _{BE(sat)}	—	—	1.0	V	I _C = 100mA, I _B = 10mA
Base-Emitter Turn-On Voltage (Note 12)	V _{BE(on)}	—	—	1.0	V	I _C = 100mA, V _{CE} = 5V
Output Capacitance	C _{obo}	—	—	20	pF	V _{CB} = 20V, f = 1MHz
Current Gain-Bandwidth Product	f _T	30	—	—	MHz	V _{CE} = 20V, I _C = 10mA, f = 20MHz

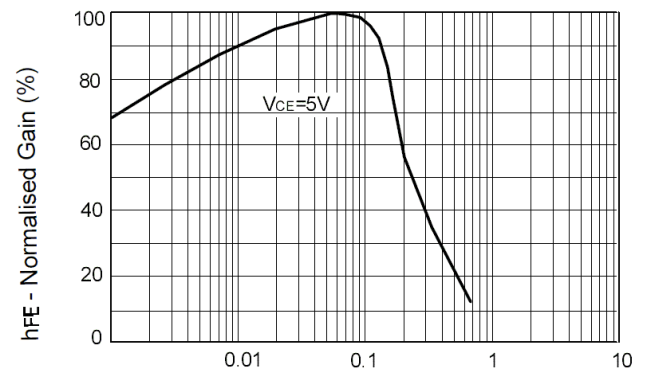
Note: 12. Measured under pulsed conditions. Pulse width ≤ 300 μs. Duty cycle ≤ 2%.

Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



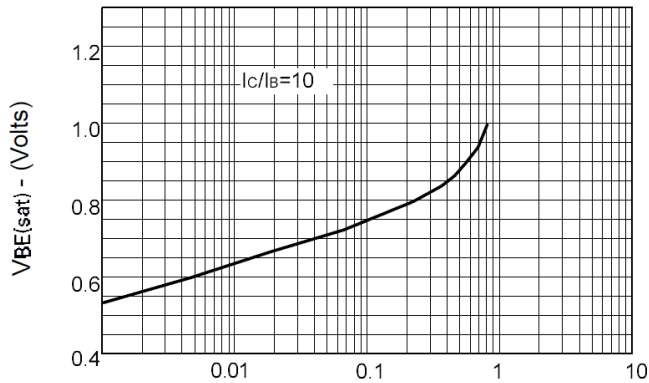
IC - Collector Current (Amps)

VCE(sat) v IC



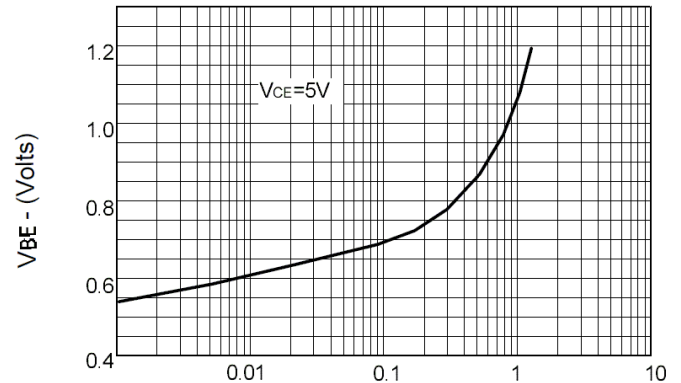
IC - Collector Current (Amps)

hFE v IC



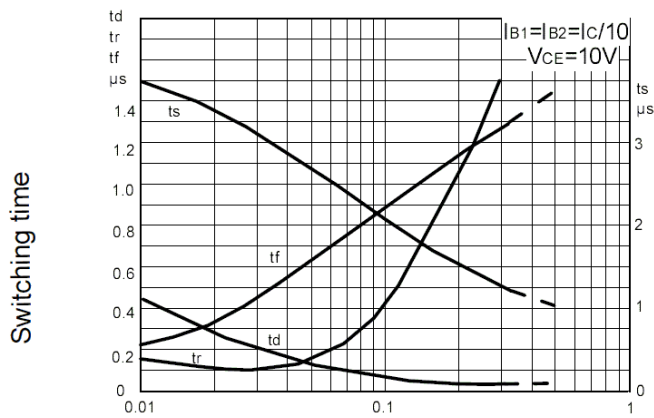
IC - Collector Current (Amps)

VBE(sat) v IC



IC - Collector Current (Amps)

VBE(on) v IC

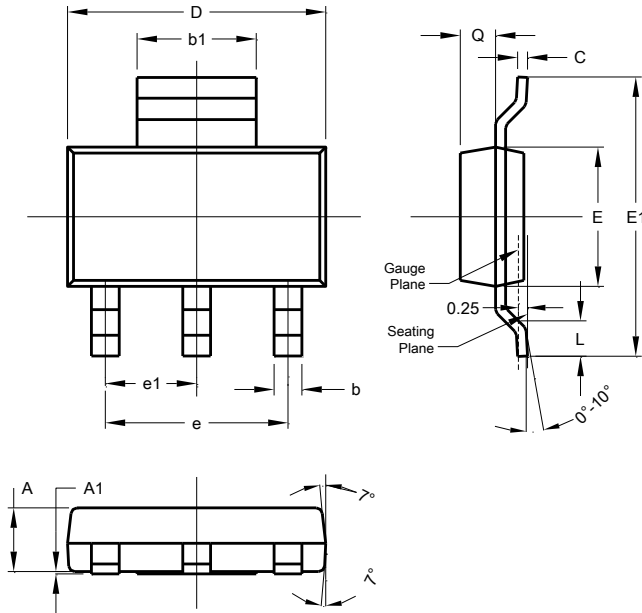


IC - Collector Current (Amps)

Switching Speeds

Package Outline Dimensions

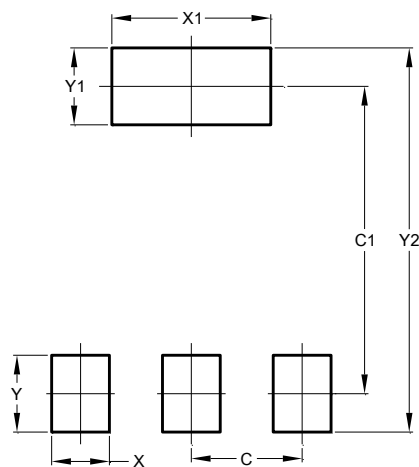
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device terminals and PCB tracking.

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